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ABSTRACT

Human cognitive system and information processing theories were used as the theoretical base that frames an interpretation of adult literacy research from World War I (WWI) through 1993. These theoretical perspectives are as follows: (1) literacy learning is grounded in a distinct developmental sequence; and (2) literacy learning is dependent on listening skills and experience, literacy opportunities and practice, and the general body of knowledge created through these experiences. The military origins of intelligence assessment include the WWI Alpha and Beta tests, Army General Classification Test of WWII, Armed Forces Qualification Test, and Armed Services Vocational Aptitude Battery. National civilian studies of literacy assessment differ from the military tests primarily in design. Civilian tests focus on use of "real-world" test items and open-ended questions rather than multiple-choice items. Results of civilian studies show the same strong trends evident through the military studies: individuals with more formal education read more and have higher test scores; individuals with more education are more likely to read and to read a variety of materials; and whites outperform Hispanics and Hispanics outperform African-Americans overall. In general, findings indicate the following: listening skills are higher than reading skills; intergenerational literacy is another important facet of increasing literacy for individuals throughout society; and literacy level affects job status. (YLB)

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Enhancing adult literacy in the State of Ohio

Research to Practice

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Adult Literacy in the United States: A Compendium of Quantitative Data and Interpretive Comments

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by Thomas G. Sticht and William B. Armstrong

Sticht and Armstrong wrote this compendium of research for the National Institute for Literacy. This overview ranges from the earliest adult literacy assessments conducted by the military during WWI, to the most recent assessment, the National Adult Literacy Survey conducted in 1993.

This report is designed for the adult literacy professional who desires a more in-depth understanding of the research background that has often directed the focus of adult literacy practices. Sticht and Armstrong begin the article with a clear theoretical stance, which frames their interpretation of the research. They then cover the major research design and findings from the military and civilian literature. The compendium includes liberal examples of the actual test items used for the various tests and studies. Later they discuss the special issues of the research in light of workforce participation, intergenerational literacy, and listening and reading skills correlation. They conclude with the quantitative research on the effect of adult basic education efforts.

Authors' Theoretical Position

Sticht and Armstrong use human cognitive system and information processing theories as their theoretical base. These theoretical perspectives includes the following:

- Literacy learning is grounded in a distinct developmental sequence. This development corresponds to four stages:
  - stage one--the newborn child: basic sensory learning about one's world is reinforced
  - stage two--infancy: precursors to language are developed; infant attends to specific visual and auditory stimuli, such as conversation with others, and memory begins to develop so that the child can recall prior information.
  - stage three--mental images are created and built upon, as well as models of language (i.e., sharing in a communication schema, listening and "talking" during a pause. Also pre-reading schemas begin to develop, holding a book, looking at pictures, listening to stories being read.) Listening skill is expected in the toddler.
  - stage four--during this stage literacy emerges. Pre-reading and pre-writing (marking and scribbling) are evident. When children begin to use graphical representation of the written language they are considered literate. This stage can continue indefinitely, leading to greater levels of literacy throughout one's lifetime.

In short, there is a continuum of increased literacy through ongoing learning of new knowledge and of literacy skills.

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- Literacy learning is dependent on listening skills and experience, literacy opportunities and practice, and the general body of knowledge often created through these experiences. Learning is processed through constructivist activities. The individual constantly builds on new information through existing knowledge structures. One of the primary emphases throughout the compendium is that high literacy level is correlated with several factors:
  - vast bodies of general knowledge
  - high level of education
  - significant practice in reading independent of formal schooling.

Quantitative Studies of Intelligence and Literacy Assessments

Military origins of intelligence assessment

WWI Alpha and Beta Tests

"Alpha" and "Beta" tests were used as measures of assessment in WWI. These tests were based on the theory that intelligence was innate, so test designers used 2 types of tests to assess intelligence, those for literate individuals (Alpha) and those for low-literate, non-literate or non-English speaking persons (Beta). These tests differed in the following ways:

- knowledge expected in each test was different (the Alpha test expected use of long term memory stores; the Beta did not)
- information processing used in each was different (working memory was emphasized in the Beta tests)
- both tests used aspects of literacy ability; although the Alpha test specifically used reading, both demanded that the individual examine graphical displays of information and interpret and communicate something about that information (a distinct literacy act).

The Army General Classification Test of WWII

This test did not measure native intelligence. The researchers wanted to measure "general learning ability." Scores were used to assign individuals to different "grades" ranging from I to V (fastest learners to slowest respectively). As a result of the findings of the exam, the entire classification grade V was "excluded from service" in 1948.

Armed Forces Qualification Test

In 1950 another test was designed for incoming armed forces recruits (AFQT). Speed was not emphasized in this test as it had been in the general classification test. Instructions for test questions were made more explicit. These tests were used to group test takers into "mental categories." Of the five grades the grade level V was excluded again from opportunity to serve.

Armed Services Vocational Aptitude Battery (ASVAB)

In 1973 the ASVAB Armed Services Vocational Aptitude Battery, which included aptitude subtests, was added to the AFQT. The following findings are significant for the ASVAB tests:

- Females outperform males in coding speed, numerical operations, and paragraph comprehension.
- Males outperform females in math knowledge, electronics, general science, auto and shop information categories.
- The trend for African-Americans between men and women is the same as for whites.
- Whites outperform African-Americans in all subtests.
- Correlations between tests show that greater knowledge in diverse areas of highly literate people increases scores on all subtests (the converse is true for lower literate individuals).

National Civilian Studies of Literacy Assessment

These studies differ from the military tests primarily in design. Civilian tests focus on use of "real world" test items and open-ended questions rather than multiple choice items. The studies are as follows:

- Buswell study 1937 (non-national assessment)
- National Assessment of Educational Progress 1970-1971

- Louis Harris and Associates "Survival Literacy" Study, 1970
- Adult Functional Reading Study, 1973
- The Adult Performance Level Study, 1971-1977
- National Assessment of Educational Progress Literacy: Profiles of America's Young Adults, 1986
- National Adult Literacy Survey, 1993

The Young Adult Literacy Survey and the National Adult Literacy Survey both used scale categories. There were five categories. An important point made by the authors is that if a person is categorized at a certain level this does not mean that s/he cannot perform higher than that level. It only means that the probability is lower for performance at higher levels.

These studies varied, but the focus for most was "real world" functional test items in which the subject would read an ad and answer some questions about it, or calculate the answer to a math question. Results of these civilian studies showed the same strong trends evident through the various military studies, which are:

- The more formal education, the more the individual reads, and the greater the test scores
- The more education, the more likely an individual is to read, and to read a variety of materials
- Whites outperform Hispanics and Hispanics outperform African-Americans overall.

Some Specific Findings of Importance to the Adult Basic Education Practitioner

- In general, listening skills are higher than reading skills, so a test that determines a person's listening skill level indicates a "reading potential" that is higher than the actual reading ability of a non- or low-level reader. Based on this it was assumed that adults who sought out literacy improvement would be able to progress more quickly than children, since the adults would have years more experience in listening and oral comprehension of language. This is not so, however, according to some data collected by Sticht and James. The implications are that adults who wish to make significant gains in the area of literacy will need help in increasing overall knowledge and listening and language comprehension to make strides in increased levels of listening skills and reading.
- Intergenerational literacy is another important facet of increasing literacy for individuals throughout society. The higher one's parents' education (especially the mother's) the higher one's own literacy skills will be. Consequently, the cycle of literacy development is intricately intertwined with the parent's literacy levels.
- Finally, literacy level affects job status. One's job status and income level is tied to one's education and one's literacy level.

Sticht, Thomas G. & Armstrong, William B. (1994). Adult Literacy in the United States: A Compendium of Quantitative Data and Interpretive Comments. San Diego Community College District.

This compendium can be checked out through the OLRC library. Please contact us at 1-800-765-2897 to request it.

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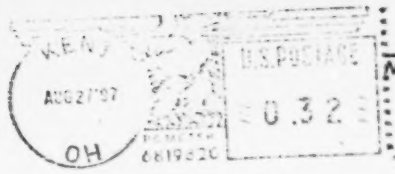

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